OFFICE OF NAVAL RESEARCH

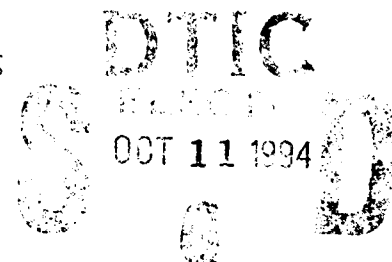## PUBLICATIONS/PATENTS/PRESENTATIONS/HONORS REPORT

for

1 October 1993 through 30 September 1994

for

Grant No: N00014-91-J-1852

VLSI for High-Speed Digital Signal Processing

and for AASERT Contract
Grant No: N00014-93-1-1019

DTIC
OCT 11 1994

Principal Investigator: Professor Alan N. Willson, Jr.

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94-31980

OFFICE OF NAVAL RESEARCH
PUBLICATION/PATENTS/PRESENTATION/HONORS REPORT
for
1 Oct 93 through 30 Sept 94

R&T Number: 414-8503-03

Contract/Grant Number: N00014-91-J-1852

Contract/Grant Title: VLSI for High-Speed Digital Signal Processing

Principal Investigator: Alan N. Willson, Jr.

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a. Number of Papers Submitted to Referred Journal but not yet published: __2__

b. Number of Papers Published in Referred Journals: __2__
   (list attached)

c. Number of Books or Chapters Submitted but not yet Published: __0__

d. Number of Books or Chapters Published: __0__
   (list attached)

e. Number of Printed Technical Report & Non-Referred Papers: __0__
   (list attached)

f. Number of Patents Filed: __1__

g. Number of Patents Granted: __0__
   (list attached)

h. Number of Invited Presentations at Workshops or Prof. Society Meetings: __1__

i. Number of Presentation at Workshop or Prof. Society Meetings: __6__

j. Honors/Awards/Prizes for Contract/Grant Employees:
   (list attached. this might Include Scientific Soc. Awards/Offices,
   Promotions, Faculty Award/Offices etc.) _____

k. Total number of Graduate Students and Post-Docs Supported at least 25%, this
   year on this contract/grant:
   Grad Students __5__ and Post Docs __0__

How many of each are females or minorities?
(These 6 numbers are for ONR's EEO/Minority
Reports; minorities include Blacks, Aleuts
Amindians, etc and those of Hispanic or
Asian extraction/nationality. This Asians
are singled out to facilitate meeting the
varying report semantics re "under-
represented")

- Grad Student Female __1__
- Grad Student Minority __0__
- Grad Student Asian e/n __4__
- Post-Doc Female __0__
- Post-Doc Minority __0__
- Post-Doc Asian e/n __0__

Accesion For

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DTIC TAB	☐	
Unannounced	☐	
Justification		

By _____
Distribution /

Availability Codes

Dist	Avail and / or Special
A-1	

(a.) Papers Submitted to Refereed Journals (and not yet published)

K-Y. Khoo, A. Y. Kwentus, and A. N. Willson, Jr., "An Efficient 180 MHz Programmable FIR Digital Filter," submitted to *IEEE Journal of Solid-State Circuits,* 1994. (ONR, MICRO)

A. N. Willson, Jr. and H. J. Orchard, "An Improvement to the Powell and Chau Linear Phase IIR Filters," to appear in the October 1994 issue of *IEEE Trans. on Signal Processing.* (ONR, NSF)

(b.) Published Papers in Refereed Journals

A. Y. Kwentus, H-T. Hung, and A. N. Willson, Jr., "An Architecture for High-Performance/Small-Area Multipliers for Use in Digital Filtering Applications," *IEEE Journal of Solid-State Circuits,* vol. 29, pp. 117-121, February 1994. (ONR)

M. J. Werter and A. N. Willson, Jr., "Automated Programming of Digital Filters for Parallel Processing Implementation," *IEEE Trans. on Circuits and Systems-II,* vol. 41, pp. 285-294, April 1994. (ONR)

(c.) Books or Chapters Submitted for Publication

None.

(d.) Books or Chapters Published

None.

(e.) Printed Technical Reports and Non-Refereed Papers

None.

(f.) Patents Filed

A Programmable Digital Signal Processor Using Switchable Unit-Delays for Optimal Hardware Allocation (Patent filed, April 1993)

(g.) Patents Granted

None.

(h.) Invited Presentations at Workshops or Professional Society Meetings

A. N. Willson, Jr., "Transistor Network Operating Point Theory." Keynote lecture, Nonlinear Circuit Analysis and Simulation Workshop, AT & T Bell Laboratories, Murray Hill, NJ, August 8-9, 1994.

(i.) Contributed Presentations at Workshops or Professional Society Meetings

A. Y. Kwentus, M. J. Werter and A. N. Willson, Jr., "A Programmable Digital Filter IC Employing Multiple Processors on a Single Chip," *Proc. DSPx*, Santa Clara, CA, Oct. 5-7, 1993, pp. 299-308. (ONR, MICRO)

K-Y. Khoo, A. Y. Kwentus and A. N. Willson, Jr., "An Efficient 180 MHz Programmable FIR Digital Filter," *Proc. DSPx*, Santa Clara, CA, Oct. 5-7, 1993, pp. 309-316. (ONR, NSF)

A. N. Willson, Jr. and H. J. Orchard, "An Improvement to the Powell and Chau Linear Phase IIR Filters," *Proc. of ICASP '94*, Adelaide, Australia, Apr. 19-22, 1994, pp. III.573-III.576. (ONR, NSF, MICRO)

K-Y. Khoo and A. N. Willson, Jr., "Low Power CMOS Clock Buffer," *Proc. of ISCAS '94*, London, May 30-June 2, 1994, pp. 355-358. (ONR, NSF)

P. Saghizadeh and A. N. Willson, Jr., "A New Approach to the Design of Three-Channel Perfect-Reconstruction Linear-Phase FIR Filter Banks." *Proc. of ISCAS '94*, London, May 30-June 2, 1994, pp. 157-160. (ONR, NSF)

P. Saghizadeh and A. N. Willson, Jr., "Using Unconstrained Optimization in the Design of Two-Channel Perfect-Reconstruction Linear-Phase FIR Filter Banks," *Proc. of the 36th Midwest Symposium on Circuits and Systems*, Lafayette, LA, August 15-17, 1994. (ONR, NSF)

(j.) Honors/Awards/Prizes

A. N. Willson, Jr., and M. M. Green: W. R. G. Baker Prize Award, IEEE.

A. N. Willson, Jr., and M. M. Green: 1994 Guillemin-Cauer Award, IEEE Circuits and Systems Society.

K-Y. Khoo: 1994 UCLA School of Engineering, Outstanding M.S. Student Award.

Linda T-P. Ying: 3rd Place Prize Award ($2,000) in 1994 Student VLSI Design Contest (a national competition sponsored by Mentor Graphics, Electronic Design, Hewlett Packard, Sun Microsystems, and Texas Instruments) for "High-Speed Programmable FIR Prefilter Implementation." This was the IC resulting from Ms. Ying's M.S. Thesis project, which was supported by this ONR grant.